

To: All Persons Interested in the Health of Havasupai Watersheds

From: Marian Marshall, Havasupai Department of Natural Resources

Date: April 15, 1999

RE: Havasupai Watershed Assessment"

Enclosed, please find the *Havasupai Watershed Assessment* as stipulated by the Federal *Clean Water Action Plan*. Under the Plan, States and Tribes have been asked to complete watershed assessments to help guide the development of national restoration strategies in 1999 and steer the use of proposed funding made available through President Clinton's FY 1999 Clean Water and Watershed Restoration Budget Initiative. The goal is to accelerate watershed restoration in a coordinated manner to achieve maximum effect.

Two watersheds, as defined by the USGS Hydrologic Unit Code (HUC), involve Havasupai Reservation land: Havasu Creek (HUC 15010004) and Colorado River (HUC 15010002). The Colorado River watershed (HUC 15010002) has been excluded from further assessment because of the limited amount of Havasupai land within this watershed. The Havasu Creek watershed (15010004) comprises about 90% of the reservation. Because this watershed involves the majority of Havasupai land, the Havasupai Tribe has decided to prepare an assessment that focuses on this watershed.

The Havasu Creek watershed has been categorized as Category III- Watersheds with Pristine or Sensitive Aquatic System Conditions on Lands Administered by Federal, State, and Tribal Governments; and, Category IV- Watersheds with Insufficient Data to Make an Assessment. The assessment has further identified the Havasu Creek watershed as a high priority for funding under the Clean Water Action Plan. If funding is provided the Tribe will work with EPA and the State and federal land managers to: (1) complete a more complete assessment and (2) work together to focus resources and implement effective strategies to solve these problems.

Thank you for your interest in this matter. Please contact our office at (520) 448-2457 with questions or comments.

HAVASUPAI WATERSHED ASSESSMENT

INTRODUCTION

The Executive Office released the *Clean Water Action Plan*, in February 1998, that presents a broad vision of watershed protection, in which protections for America's waters and natural resources are integrated with traditional clean water and human health objectives. This includes a new, cooperative approach to restoring and protecting water quality. State and Tribes are asked to work with stakeholders and interested citizens to: 1) identify watersheds with the most critical water quality problems, and 2) work together to focus resources and implement effective strategies to solve these problems. A national *Unified Watershed Assessment* (UWA) will classify watersheds and identify those in need of restoration. Thereafter, the *Clean Water Action Plan* will target federal funding towards specific watersheds

State and Tribal governments are asked to take the lead in developing assessments for watersheds or portions of watersheds on their land in cooperation and coordination with other governmental entities. The Havasupai Division of Natural Resources, in response to the February 1998 *Clean Water Action Plan* calling for a UWA and prioritization, is submitting this report, *Havasupai Watershed Assessment*.

The Havasupai Reservation encompasses over 191,000 acres in Northern Arizona on the Coconino Plateau (Figure 1). Two watersheds, defined by the USGS Hydrologic Unit Codes (HUC) 15010002 and 15010004, involve Havasupai Reservation land (Figure 2). The principal watershed is the Havasu Creek watershed (1501004). It comprises 1,874,946 acres. Approximately 90% of the Havasupai Reservation lies within the Havasu Creek Watershed. The secondary watershed is the Colorado River Watershed (15010002). It comprises about 868,899 acres, of which 2% extends into Havasupai Reservation land. Table 1 summarizes the 8-digit HUC information, size, and areas extending into the Havasupai Reservation.

Table 1. Summary of Havasu Creek Watershed Assessment

8 digit USGS Hydrologic Unit Code	Total Acreage of Watershed (acres)	Acres of watershed on Havasupai Land (acres)	Percentage of Watershed on Havasupai Land	Percentage Havasupai Land within the watershed
Havasupai Creek 15010004	1,874,945	154,069	8.2%	90%
Colorado River 15010002	868,899	17,378	2%	10%

Since the Havasu Creek watershed involves the majority of Havasupai land (approximately 90%), this assessment focuses on this watershed. The watershed provides Tribes beneficial-uses including, drinking water, recreation, livestock and agricultural watering, and economic revenue. The health of this watershed is fundamental to the overall quality of life to the Havasupai Tribe. The Clean Water Action Plan, if sufficiently funded, will help implement programs on the Havasupai Reservation that will ensure the future good health of the Havasu Creek watershed and its inhabitants.

ASSESSMENT

CATEGORY

Under the *Clean Water Action Plan*, States and Tribes are asked to categorize and prioritize their watershed(s) in accordance with the general framework of the Plan. Accordingly, states/tribes should first assess their watershed according to the following categories.

1. Category I- Watersheds in Need of Restoration. These watersheds do not now meet clean water and other natural resource goals. Selection factors include:
 - a. Nonattainment of national clean water goals (including exceedance of state or tribal water quality standards, drinking water standards, etc.);
 - b. Nonattainment of natural resource goals related to the aquatic systems, including goals related to habitat, ecosystem health, and living resources;
 - c. Other appropriate measures and indicators of degraded aquatic system conditions (e.g., wetland condition and current and historical loss rates, percent impervious surface, and other measures of aquatic loss of habitat); and
 - d. Decline in the condition of living and natural resources that are part of the aquatic system in the watershed (e.g., decline in the populations of rare and endangered aquatic species, decline in healthy populations of fish and shellfish, etc.)
2. Category II- Watersheds Meeting Goals but Needing Action to Sustain Water Quality. These watersheds meet clean water and other natural resource goals and standards and support healthy aquatic systems. All such watersheds need the continuing implementation of base clean water and natural resource programs to maintain water quality and conserve natural resources.
3. Category III- Watersheds with Pristine or Sensitive Aquatic System Conditions on Lands Administered by Federal, State, and Tribal Governments. States and tribes work cooperatively with federal land managers to identify watersheds with exceptionally pristine water quality, drinking water sources, or display other sensitive aquatic system condition, which are located on lands administered by federal, state, or tribal governments.
4. Category IV- Watersheds with Insufficient Data to Make an Assessment. These watersheds lack data, critical data elements, or the data density needed to make a reasonable assessment.

Based on these criterion, the Havasu Creek watershed (15010004) has been categorized under Categories III and IV.

PRIORITY

The prioritization process used in this assessment relied on a number of tribal issues that are affected by the quality of the Havasupai Watershed. According to the Clean Water Action Plan, information and tools used in the prioritizing process is left to the discretion of each tribe. In determining the following issues, the Havasupai Tribe examined values, risks, and opportunities to produce environmental results:

1. Safe Drinking Water (SDW): Shallow alluvial wells are used as drinking water sources by the Havasupai and managed by them. Recently, there has been concern for the lack of water quality testing for the Havasupai community drinking water source.
2. Wildlife and Threatened and Endangered Species (T&E): The Havasu Creek watershed provides unique habitat for a variety of wildlife and threatened and endangered species that receive protection under the Endangered Species Act as administered by the U.S. Fish and Wildlife Service.
3. Cultural Properties: The Havasupai attach significant cultural significance to water of the Grand Canyon, especially that of Havasu and other springs. They note that “water circulating within the ground of the Coconino Plateau is the life-blood of the earth and the Havasupai. The water circulates in a pattern of equilibrium, a pattern of balance, that is supported by, accepted into, and is an integral part of the Havasupai way of life as taught by Havasupai religious leaders and elders.” Additionally, the springs, the land, and the water flowing underground are sacred to the Havasupai.
4. Clean Water (Surface Water): Surface water is present in the watershed. Currently these waters are used for recreational tourism and livestock and agricultural watering. The quality of these water sources is vital to the well being of the Tribe. Of primary concern is non-point-source pollution.
5. Waste Disposal. Solid waste and wastewater disposal containment areas are vulnerable to flooding. Major flood events have occurred twice over the past 10 years.
6. NRCS Geographic Priority Areas (GPA): The Havasu Creek watershed contains one or more GPA's according to the NRCS. The GPA's represent degraded uplands, degraded riparian/wetland systems, and/or sediment/salinity impacts irrigation systems. These are areas currently under or targeted for management implementation.
7. Recreation Areas (RA): Currently the Havasupai Reservation is a destination for many visitors each year. Most of these visitors come to see the beautiful canyon and its water falls, and swim in the turquoise waters. Recreational areas rely on the Havasupai surface waters. The fact that recreational activities degrade water quality through erosion, runoff from trails and campsites, and on-site waste disposal raises a concern by the tribe about the affect of recreational use on the watershed.
8. Floodplain Development (FD): All developed areas on the reservation are located in the canyon floodplain. Two large floods have occurred during the past 10 years that resulted in evacuation of the residents.
9. Tourism Revenue (TD): The surface waters provide the Tribe it's major economic resource involving tourism.

Each issues described above was ranked according to low priority, high priority or unknown. Most of the issues were ranked as high priority (Table 1). The remaining issues are uncharacterized due to the lack of available information (Table 1).

Table 1. Prioritization Worksheet of HUC 15010004 (Havasupai Creek)

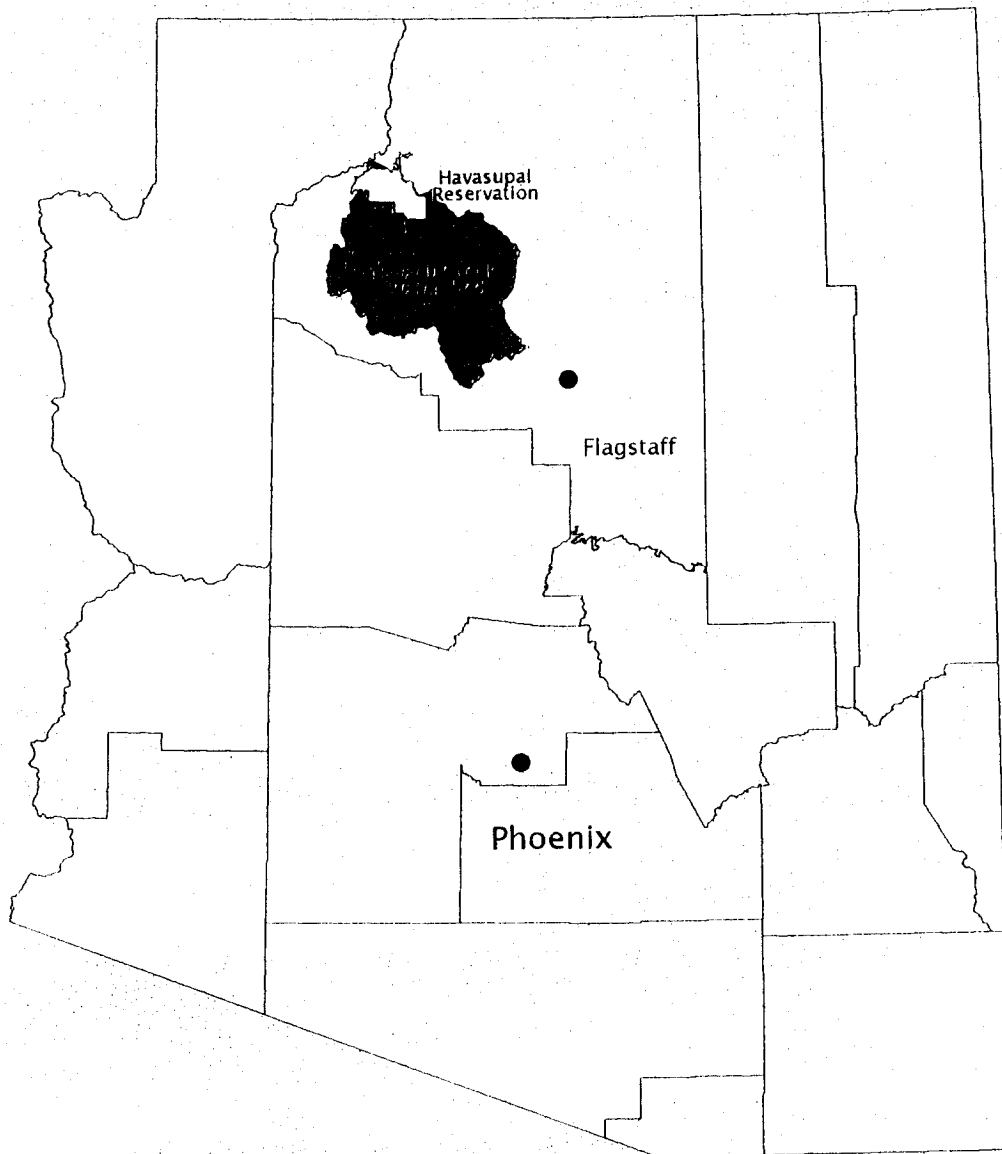
Issue	Low Priority	High Priority	Unknown
Safe Drinking Water			x
Threatened and Endangered Species		x	x
Cultural Properties		x	
Clean Water (surface waters)		x	
Waste Disposal			x
NRCS Geographic Priority Areas		x	
Recreation Areas		x	
Floodplain		x	
Tourism Revenue			

CONCLUSION

The assessment reveals that 90% of the Havasupai Reservation lies in the Havasu Creek Watershed (15010004). This watershed is categorized under Categories III and IV. Category III watersheds are described as having pristine or sensitive aquatic system conditions on lands administered by federal, state and tribal governments; and, Category IV watersheds are described as having insufficient data to make a reasonable assessment.

Based on the assessment, the Havasu Creek watershed has been identified as a high priority for funding under the Clean Water Action Plan. If funding is provided, the Tribe will work with EPA and the State and federal land managers to: (1) complete a more complete assessment and (2) work together to focus resources and implement effective strategies to solve these problems.

Information used in this report has been based on consultation with Havasupai Division of Natural Resources, U.S. Natural Resources Conservation Service (NRCS), and Arizona Department of Environmental Quality. In addition, Geographic Information System (GIS) and ARCVIEW were tools used to compile the matrix data and Figures.



Havasupai
Watersheds

Figure 1 Location Map



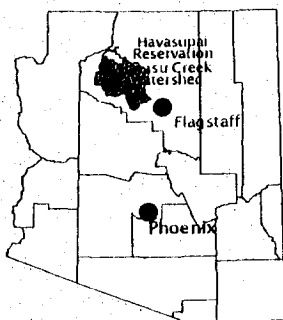
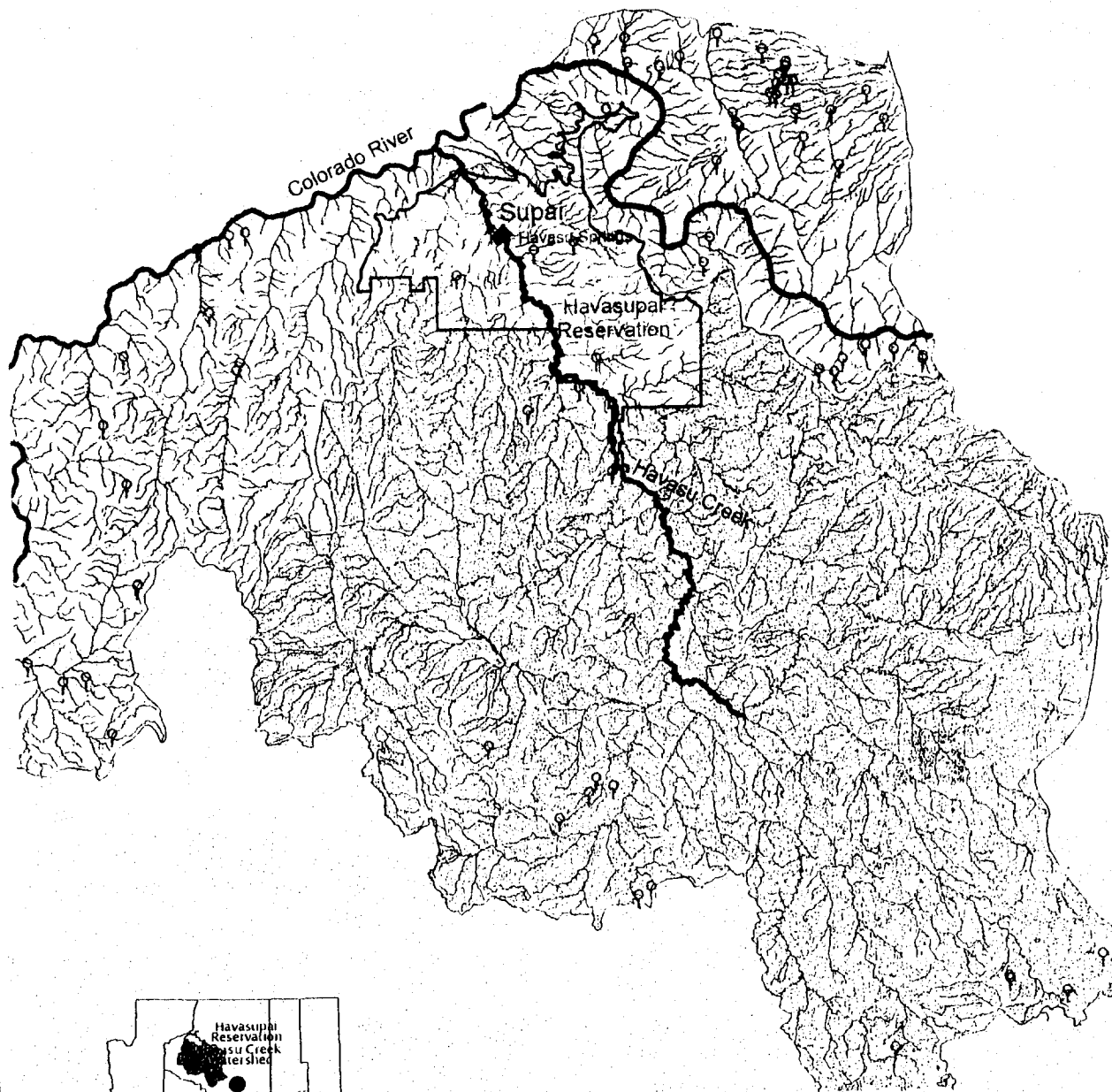


Figure 2 Havasu Creek Watershed
(15010004, USGS HUC)